

Remarks

Applicant respectfully requests reconsideration of the application.

Claim 18 is rejected under 35 U.S.C. Section 112 as being indefinite. This claim has been split into amended claim 18 and new claim 25 so that a laminate and coating are claimed separately rather than as a group in original claim 18.

Claims 5-7 and 16 are indicated as being allowable if re-written in independent form.

Claims 1-4, 8-15, 17-18 and 23-24 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 5,374,675 to Plachetta et al. (Plachetta) in view of U.S. Patent No. 5,075,195 to Babler et al. ("Babler") and U.S. Patent No. 5,840,142 to Stevenson et al.

Claims 1-4, 8-15, 17-24 are rejected under 35 U.S.C. Section 103(a) as being unpatentable over U.S. Patent No. 5,374,675 to Plachetta et al. (Plachetta) in view of U.S. Patent No. 5,075,195 to Babler et al. ("Babler") and U.S. Patent No. 5,840,142 to Stevenson et al., and further in view of U.S. Patent No. 5,897,938 to Shinmoto et al. (Shinmoto) in view of Plachetta.

Applicant respectfully traverses the rejection.

Claims 1-4, 8-15, 17-18 and 23-24 are not rendered obvious by the combination of Plachetta, Babler, Stevenson

Claim 1

The combined teachings of these references fail to disclose laser sensitizing additives for laser engraving as claimed, and in particular, do not disclose: "an effective amount of a laser sensitizing additive, the laser enhancing additive sensitizing the composition for laser engraving and comprising: a first quantity of at least one of copper potassium iodide (CuKI₃), Copper Iodide (CuI), potassium iodide (KI), sodium iodide (NaI), and aluminum iodide (AlI); and a second quantity of at least one substance selected from the group consisting of zinc sulfide (ZnS), barium sulfide (BaS), alkyl sulfonate, and thioester" in combination with the other elements of claim 1.

Plachetta teaches a thermoplastic molding material including various components. The Office cites col. 3 of Plachetta as allegedly teaching the first quantity of laser enhancing additive. However, instead of teaching a laser sensitizing additive, Plachetta

teaches the use of copper halides, including for example, copper iodide, as antioxidants. In this context, an antioxidant is a chemical substance added to a plastic resin to minimize or prevent the effects of oxygen attack on the plastic, e.g., yellowing or degradation. Chemical attacks by oxygen can render a plastic brittle or cause it to lose desired mechanical properties. Plachetta's teaching of copper iodide as an antioxidant provides no teaching to one of ordinary skill in the art to use the copper iodide as a laser sensitizing additive.

Plachetta teaches that this antioxidant is one of many fibrous or particulate fillers. Plachetta describes that these fillers are a component of the thermoplastic resin from 0 to 69.995% by weight.

In column 4, Placheta refers to pigments like cadmium sulfide, but does not teach that the pigment is a laser sensitizing additive. Cadmium sulfide is known as a yellow pigment, and Placheta teaches the use of it as a pigment, presumably to add color to the thermoplastic molding material. One of ordinary skill would be unlikely to pick a yellow pigment for use as a laser sensitizing additive as claimed because there is no reason that teaching of a yellow colorant would provide any laser sensitizing properties.

Babler does not teach the claim elements missing from Plachetta identified above, it does not teach the claimed "second quantity" additives of claim 1, and one of skill in the art could not combine these references to form the inventive combination. Babler teaches the use of molybdenum disulfide as an additive for laser marking. Babler teaches that additional colorants may be included, namely white pigments such as zinc sulfide. Babler does not suggest that the zinc sulfide be used as a laser sensitizing additive. Instead, it teaches that zinc sulfide may be used as an additional colorant to provide a residual shade. See Babler at col. 7, lines 39-43. Thus, Babler does not provide sufficient teachings to one of skill in the art to compensate for the lack of teachings of Plachetta as noted above. Babler's teaching regarding colorants used for creating a residual shade of color do not provide pertinent teaching to one of ordinary skill regarding laser sensitizing additives as claimed.

Stevenson also does not teach the claim elements missing from Plachetta and Babler, and one of skill in the art could not combine these references to form the

inventive combination. Stevenson refers to colorants, including barium sulfide. It provides no additional teaching regarding laser sensitizing additives.

The other independent claims 20 and 23 are patentable for at least similar reasons as claim 1. These claims recite elements, in addition to the laser sensitizing additives that further distinguish them from the cited combination.

The dependent claims 2-4, 8-15, 17-18 and 24-25 are patentable for at least the reasons provided for the independent claims.

Claims 1-4, 8-15, 17-24 are not rendered obvious by the combination of Plachetta, Babler, Stevenson and Shinmoto

Shinmoto does not add material teachings to the other references.

Regarding claim 19, Shinmoto is cited as teaching articles of manufacture capable of being laser engraved with grayscale indicia. However, Shinmoto discloses a laser beam absorbing whitish inorganic compound for forming a vivid white colored mark. One of skill in the art would not look to the teachings of Shinmoto for additives useful for engraving grayscale indicia because teachings directed to forming vivid white marks teach away from additives for engraving grayscale indicia, which necessarily involves some degree of darkening in response to laser energy to create different levels of gray. Therefore, claim 19 should be indicated as being allowable.

Claim 20 recites that the first and second laser sensitizing additives are in separate layers. Shinmoto, in contrast, places the laser marking material in a single layer, not separate layers as claimed. This is yet another reason why the combination fails to teach all of the elements of claim 20 and its dependent claims 21-22.

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Respectfully submitted,

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